WATER-SPREADING AS AN ASSURANCE AGAINST DROUGHT:

A radio talk by A. T. Mitchelson, Senior Irrigation Engineer, Division of Irrigation, Bureau of Agricultural Engineering, U. S. Department of Agriculture, delivered during the Western Farm and Home Hour, Thursday, April 21, 1932, through Station KGO and nine other stations associated with the NBC - KGO network, Pacific Division, National Broadcasting Company.

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It is true that up to date the precipitation in the sections of our Western country where irrigation of crops is practiced has been heavier this year than for the past several years. It is true also that where reservoir capacity for storage is available and has been provided we shall go through the coming irrigation season with an ample water supply. However, there are sections, particularly in California, where reservoir sites are not feasible, and it is in these areas that every means of conservation must be practiced. Lacking surface reservoir capacity, we must resort to other means of holding for future use the storm waters which usually come during the non-growing season. Where winter irrigation is practicable and soil formations preclude the storage of sufficient quantities of water in subterranean reservoirs, this method may be utilized, but wherever conditions are suitable, we must resort to water-spreading.

In a former talk from this Station, I told you of the characteristics to be considered in the selection of areas over which water should be spread for underground storage, but I shall again briefly mention some of them. The soil type with its stratification is, of course, the first factor to be considered, but we should also consider topography, slope, area, location with reference to diversions, surface drainage, underground drainage, and the direction of movement of the underground water.

Natural spreading grounds fulfilling the required conditions are found bordering the streams near and below mountain canyons. The elevated portions of the debris cones are generally made up of coarse materials and have convenient slopes. They are also generally too rough for economical use in crop production and if not utilized for underground storage would be waste land. In some instances, also, such grounds are found within the mountain canyons. It frequently happens that the proper place to spread water for conservation is also the place to spread it for flood control. Generally speaking, this place is just below the mouth of the canyon.

Enough regarding the place. Now for some actual results. While we must not be lulled into the sleep of security by the copious early rains of this season, it is gratifying to report that there has been a marked rise in the underground water surface of most of our pumped areas. This is generally true in southern California and the Department of Water and Power of the City of Los Angeles presents an outstanding example of what can be done in the utilization of a surface water supply and waste land on a large scale. Having lost the very valuable surface storage capacity of St. Francis reservoir, the city resorted to the use of its Tujunga grounds for the storage of surplus Owens Valley water and, in December, 1931, started spreading water over 35 acres of especially prepared ground in this area. It also utilized in Tujunga Wash several gravel pits which had been

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abandoned and during the early part of this month, when the speaker visited their spreading works, they were placing underground for future use about 400 acre-feet of water per day, or at the rate of 12,000 acre-feet per month. I am not sure of the capcity of this underground reservoir, but I believe it is in the neighborhood of 120,000 acre-feet, and in addition to being approximately three times the capacity of St. Francis reservoir, it is at the very door of the city.

We are also certain at this time that the cone of San Gabriel River will be filled to capacity this year, and that several of the other cones are storing more water than they have for several seasons.

The Bureau of Agricultural Engineering of the United States Department of Agriculture has continued its studies of the various methods of water-spreading and has obtained some worth-while data on the three generally practiced methods of water-spreading: namely, the utilization of lands covered with native growth, the furrow method, and the basin method. As in the previous two seasons, the first of these three methods continued to show the greatest efficiency in the rate of percolation. In addition, this year we have been fortunate in obtaining some data on the effect of a rising water table on the rate of percolation. The Department is in hopes of presenting in published form the data developed on this and other experimental work on water-spreading some time next fall.